

03/19/99

Jc503 U.S. PTO

**UTILITY PATENT APPLICATION TRANSMITTAL
(Large Entity)***(Only for new nonprovisional applications under 37 CFR 1.53(b))*Docket No.
MICE-0017-US

Total Pages in this Submission

TO THE ASSISTANT COMMISSIONER FOR PATENTSBox Patent Application
Washington, D.C. 20231

Transmitted herewith for filing under 35 U.S.C. 111(a) and 37 C.F.R. 1.53(b) is a new utility patent application for an invention entitled:

Software Module Update

and invented by:

Douglas L. Rollins

Jc549 U.S. PTO
09/27/95
03/19/99If a **CONTINUATION APPLICATION**, check appropriate box and supply the requisite information:☐ Continuation ☐ Divisional ☐ Continuation-in-part (CIP) of prior application No.: _____

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Which is a:

☐ Continuation ☐ Divisional ☐ Continuation-in-part (CIP) of prior application No.: _____

Enclosed are:

Application Elements

1. ☒ Filing fee as calculated and transmitted as described below
2. ☒ Specification having 16 pages and including the following:
 - a. ☒ Descriptive Title of the Invention
 - b. ☐ Cross References to Related Applications *(if applicable)*
 - c. ☐ Statement Regarding Federally-sponsored Research/Development *(if applicable)*
 - d. ☐ Reference to Microfiche Appendix *(if applicable)*
 - e. ☒ Background of the Invention
 - f. ☒ Brief Summary of the Invention
 - g. ☒ Brief Description of the Drawings *(if drawings filed)*
 - h. ☒ Detailed Description
 - i. ☒ Claim(s) as Classified Below
 - j. ☒ Abstract of the Disclosure

UTILITY PATENT APPLICATION TRANSMITTAL (Large Entity)

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Application Elements (Continued)

3. ☒ Drawing(s) (when necessary as prescribed by 35 USC 113)
- a. ☒ Formal Number of Sheets 1
- b. ☐ Informal Number of Sheets _____
4. ☒ Oath or Declaration
- a. ☒ Newly executed (original or copy) ☐ Unexecuted
- b. ☐ Copy from a prior application (37 CFR 1.63(d)) (for continuation/divisional application only)
- c. ☒ With Power of Attorney ☐ Without Power of Attorney
- d. ☐ DELETION OF INVENTOR(S)
Signed statement attached deleting inventor(s) named in the prior application,
see 37 C.F.R. 1.63(d)(2) and 1.33(b).
5. ☐ Incorporation By Reference (usable if Box 4b is checked)
The entire disclosure of the prior application, from which a copy of the oath or declaration is supplied under Box 4b, is considered as being part of the disclosure of the accompanying application and is hereby incorporated by reference therein.
6. ☐ Computer Program in Microfiche (Appendix)
7. ☐ Nucleotide and/or Amino Acid Sequence Submission (if applicable, all must be included)
- a. ☐ Paper Copy
- b. ☐ Computer Readable Copy (identical to computer copy)
- c. ☐ Statement Verifying Identical Paper and Computer Readable Copy

Accompanying Application Parts

8. ☒ Assignment Papers (cover sheet & document(s))
9. ☐ 37 CFR 3.73(B) Statement (when there is an assignee)
10. ☐ English Translation Document (if applicable)
11. ☐ Information Disclosure Statement/PTO-1449 ☐ Copies of IDS Citations
12. ☐ Preliminary Amendment
13. ☒ Acknowledgment postcard
14. ☒ Certificate of Mailing
- ☐ First Class ☒ Express Mail (Specify Label No.): EL218152041US

UTILITY PATENT APPLICATION TRANSMITTAL (Large Entity)

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Accompanying Application Parts (Continued)

15. ☐ Certified Copy of Priority Document(s) (if foreign priority is claimed)

16. ☐ Additional Enclosures (please identify below):

Fee Calculation and Transmittal

CLAIMS AS FILED

For	#Filed	#Allowed	#Extra	Rate	Fee
Total Claims	40	- 20 =	20	x \$18.00	\$360.00
Indep. Claims	3	- 3 =	0	x \$78.00	\$0.00
Multiple Dependent Claims (check if applicable) <input type="checkbox"/>					\$0.00
BASIC FEE					\$760.00
OTHER FEE (specify purpose)					\$0.00
TOTAL FILING FEE					\$1,120.00

- ☒ A check in the amount of **\$1,120.00** to cover the filing fee is enclosed.
- ☒ The Commissioner is hereby authorized to charge and credit Deposit Account No. **20-1504** as described below. A duplicate copy of this sheet is enclosed.
- ☐ Charge the amount of _____ as filing fee.
- ☒ Credit any overpayment.
- ☒ Charge any additional filing fees required under 37 C.F.R. 1.16 and 1.17.
- ☐ Charge the issue fee set in 37 C.F.R. 1.18 at the mailing of the Notice of Allowance, pursuant to 37 C.F.R. 1.311(b).

Dated: 3-19-1999

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APPLICATION
FOR
UNITED STATES LETTERS PATENT

TITLE: Software Module Update

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Express Mail No: EL218152041US

Date: March 19, 1999

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SOFTWARE MODULE UPDATE

Background

The invention relates generally to computer system operations and, more particularly, to software module update techniques.

Over time, program modules such as driver routines, program applications and program documentation may become outdated. While the problem of obsolescence exists for many products, it is a particular problem for personal computer (PC) users. The speed with which changes can occur in the field of PCs can make program modules loaded today, outdated tomorrow.

Many software and hardware vendors provide software update facilities for users of their products. Typically, updates are available via world wide web sites and/or dial-in servers. Such services, while capable of providing a user with the needed software or documentation, may require the user have detailed technical knowledge about the product being updated. To properly obtain a driver update for a small computer systems interface (SCSI) controller card, for example, the user may need to know (among other things) the SCSI card version number and the SCSI card's basic input-output system (BIOS) version number. This level of technical information, or the expertise to obtain it, is above many user's capability. In addition, the user must be able to physically transfer (pull) the desired update module from that location at which they found it to their personal computer system. Further, this operation must be repeated for each device and/or software application that they want to update.

Thus, it would be beneficial to provide improved techniques by which users may obtain relevant updates to their existing software modules.

Summary

In one embodiment, the invention provides a method to update a software module. The method includes identifying a first version of the software module, identifying a second version of the software module, determining which

of the first and second versions of the software module is the most current version, and indicating that version of the software module determined to be most current. Methods in accordance with the invention may also include obtaining that version of the software module determined to be the most current
5 version and, possibly, loading the obtained version of the software module onto a user's computer system. Methods in accordance with the invention may be stored in any media that is readable and executable by a programmable control device.

Brief Description of the Drawings

Figure 1 shows a system that provides software module update capability is shown in accordance with one embodiment of the invention.

Figure 2 shows the flowchart of a method to provide software module update capability in accordance with one embodiment of the invention.

Detailed Description

Techniques (including methods and devices) to enable software module updates are described. The following embodiments, described in terms of techniques to update program applications and software driver modules, are
20 illustrative only and are not to be considered limiting in any respect. Further, in the interest of clarity not all features of an actual implementation are described herein. It will be appreciated that the development of any actual implementation requires numerous programming decisions to achieve the developer's specific goals such as compliance with system-related and business-related constraints.
25 Moreover, these decisions may be complex and time-consuming but would nevertheless be a routine undertaking for those of ordinary skill having the benefit of this disclosure.

Referring to FIG. 1, a system that provides software module update capability is shown in accordance with one embodiment of the invention.

30 Computer system 100 may be coupled to update information 102 and update

source 104 via communication link 106. Illustrative computer systems include general purpose (e.g., PCs) and special purpose (e.g., graphics workstations) computer systems. Update information 102 may be a database or other information storage facility that includes versioning information for various software modules. Update source 104 represents that location or locations at which software module updates are stored. Communication link 106 may be a modem connection, or a direct connection to a local area or wide area network. The form of communication link 106 is irrelevant to the invention and may, for example, employ copper wire, radio frequency or optical technologies. It will be understood that update information 102 and update source 104 may be co-located. It will be further understood that update source 104 may include multiple sites (e.g., various world wide web sites).

Update information 102 may include a variety of data for each software module that may be updated in accordance with the invention. For example, update information 102 may be organized as a database with one record for each available software module. (Software modules may include user programs such as word processing and graphics applications, or drivers to control either a hardware device (device driver) or another software subsystem.) Each record may include information representing one or more of the following: software module name; manufacturer's identification number, device identification number; device version number; BIOS version number; driver version number; date; an indication of what versions the current version is an update for; and a location of the identified module.

Referring again to FIG. 1, computer system 100 may include processor 108, memory 110, and possibly add-in cards such as video and modem cards 112 and 114 respectively. Illustrative processors include the PENTIUM® family of processors and the 80X86 families of processors from Intel Corporation. Memory 110 may include volatile (e.g., dynamic random access memory) and/or non-volatile memory (e.g., non-volatile random access memory, magnetic or optical disk units). Add-in cards represent physical devices that augment the processing

features of processor 108. Typically, an add-in card includes a programmable control device (e.g., a microprocessor, microcontroller, or a specially designed programmable state machine) and associated control memory (often referred to as BIOS).

5 As shown, memory 110 may include update routine 116 and one or more software programs 118. Update routine 116 represents one or more software program modules that works in conjunction with update information 102 and update source 104 to provide the software module update capability of the present invention. Programs 118 represents one or more user or operating
10 system applications which may be updated by update routine 116.

Referring to FIG. 2, a method to provide software module update capability is shown in accordance with one embodiment of the invention. Initially a user indicates they want to load a new program module or update an existing module (block 200). For example, a user may have purchased a new video
15 controller add-in card and now wants to install the appropriate device drivers. Update routine 116 may receive this notification in any convenient manner.

Following notification, update routine 116 obtains version information for the module being loaded/updated (block 202). If the module being updated is associated with a software application, version information may be obtained
20 through standard queries to, or inspection of, one or more of computer system 100's system files. If the module being updated is associated with a hardware device (e.g., an add-in card), update routine 116 may interrogate the card directly to obtain one or more of the following: a device identifier value; a subsystem identifier value; a device version identifier value; the device's BIOS
25 version identifier value; and the version number of any currently loaded device drives associated with the device.

Identification of version information for a software application or a previously loaded device driver may be obtained through standard queries to, or inspection of, one or more of computer system 100's system files. By way of
30 example, in a Microsoft Windows® operating system information about those

driver routines and program applications that are loaded may be obtained from the Registry file. Direct interrogation of a physical device (e.g., video controller or network interface cards) to determine the device's version information is preferred over an inspection of system files such as the Windows® Registry file.

5 Following the acts of block 202, update routine 116 may communicate with update information 102 via communication link 106 to determine what program modules are the most current for the identified device or program (block 204). Next, update routine 116 indicates the most recent module (e.g., device driver or program) to the user (block 206) which may then be loaded
10 from update source 104 in accordance with current techniques (block 208). The acts of FIG. 2 may be initiated when a user begins installation of a new device or program or at any subsequent time specified by the user.

 In one embodiment, update routine 116 shows only the most current modules for loading to the user by comparing the version obtained via
15 interrogating system 100 (the acts of block 202) and the information obtained from update information 102 (the acts of block 204). It will be recognized that the update module (i.e., that module which will update the module identified during the acts of blocks 100 and 102) may be obtained from any location (update source 104) in communication with computer system 100. For example,
20 a video controller add-in card's device driver may be located at the video card's manufacturer's website or at the website of an original equipment manufacturer who assembled and sold the video card with computer system 100. The update module may also be local to computer system 100.

 One benefit of the invention is that it allows a user to maintain their
25 system in an up to date state without requiring them to have or obtain detailed technical information about system components. Another benefit of the invention is that update routine 116 may also prevent use of inappropriate updates. For example, if a user's network controller card is not capable of using the chronologically most recent update, but instead may only use those driver
30 versions before a specified date, update routine 116 may obtain this information

from update information 102 and display only the most "relevant" current version to the user for loading during the acts of block 206 and 208. Yet another benefit of the invention is that a user does not have to know where a needed update module is located. In one embodiment the user only needs to know where or

5 how to establish communication with update information 102. In another embodiment, the location of update information 102 may be predetermined by the computer system vendor. Still another benefit of the invention is the automatic nature of update routine 116. That is, update routine 116 determines not only what driver updates are appropriate but may also (automatically or

10 following user authorization) retrieve the update modules/software and install them on a user's machine. Thus, in contrast to prior art update techniques the user does not have to know: the technical details of their system's current software load (e.g., drivers and application programs); explicit location(s) where various update modules may be located; or how to affirmatively download the

15 various update routines.

Various changes in the materials, components, circuit elements, as well as in the details of the illustrated operational method are possible without departing from the scope of the claims. For instance, acts in accordance with FIG. 2 may be performed by a programmable control device executing instructions organized

20 into a program module (e.g., update routine 116). A programmable control device may be a single computer processor (e.g., processor 108), a plurality of computer processors coupled by a communications link, or a custom designed state machine. Custom designed state machines may be embodied in a hardware device such as a printed circuit board comprising discrete logic, integrated

25 circuits, specially designed application specific integrated circuits (ASICs), or field programmable gate array devices. Storage devices suitable for tangibly embodying program instructions include all forms of non-volatile memory including, but not limited to: semiconductor memory devices such as EPROM, EEPROM, and flash devices; magnetic disks (fixed, floppy, and removable); other

30 magnetic media such as tape; and optical media such as CD-ROM disks.

While the invention has been disclosed with respect to a limited number of embodiments, numerous modifications and variations will be appreciated by those skilled in the art. It is intended, therefore, that the following claims cover all such modifications and variations that may fall within the true spirit and scope of the invention.

5

What is claimed is:

- 1 1. A method to update a software module, comprising:
 2 identifying a first version of the software module;
 3 identifying a second version of the software module;
 4 determining which of the first version and the second version of the
 5 software module is most current; and
 6 indicating that version of the software module determined to be most
 7 current.

- 1 2. The method of claim 1, further comprising obtaining that version of the
 2 software module determined to be the most current version.

- 1 3. The method of claim 2, further comprising loading the obtained version of
 2 the software module.

- 1 4. The method of claim 1, wherein the act of identifying a first version of the
 2 software module comprises communicating with a physical device associated
 3 with the software module.

- 1 5. The method of claim 4, wherein the act of communicating comprises
 2 determining an identifier value of the physical device.

- 1 6. The method of claim 5, further comprising determining a subsystem
 2 identifier value of the physical device.

1 7. The method of claim 4, wherein the act of communicating comprises
2 determining a basic input-output system version identifier value of the physical
3 device.

1 8. The method of claim 1, wherein the act of identifying a second version of
2 the software module comprises communicating with an update information
3 source.

1 9. The method of claim 8, wherein the act of communicating further
2 comprises:
3 identifying the software module to the update information source;
4 receiving, from the update information source, an indication of the second
5 version of the software module.

1 10. The method of claim 8, wherein the act of communicating comprises
2 communicating by a modem.

1 11. The method of claim 8, wherein the act of communicating comprises
2 communicating by a computer network.

1 12. The method of claim 8, wherein the act of communicating comprises
2 communicating with a database server device.

1 13. The method of claim 1, wherein the act of determining comprises
2 comparing at least one characteristic of the first identified first version of the
3 software module with the same characteristic of the second identified first
4 version of the software module.

1 14. The method of claim 1, wherein the act of indicating comprises visually
2 displaying an indication of the software module determined to be the most
3 current version to a user.

1 15. The method of claim 2, wherein the act of obtaining comprises retrieving
2 that version of the software module determined to be the most current version
3 from an update source.

1 16. The method of claim 15, wherein the act of retrieving comprises retrieving
2 from an update source that is physically distinct from the location of the first
3 identified version of the software module.

1 17. A program storage device, readable by a programmable control device,
 2 comprising:
 3 instructions stored on the program storage device for causing the
 4 programmable control device to
 5 identify a first version of a software module;
 6 identify a second version of the software module;
 7 determine which of the first version and the second version of the
 8 software module is most current; and
 9 indicate that version of the software module determined to be most
 10 current.

1 18. The program storage device of claim 17, further comprising instructions to
 2 obtain that version of the software module determined to be most current
 3 version.

1 19. The program storage device of claim 18, further comprising instructions to
 2 load the obtained version of the software module.

1 20. The program storage device of claim 17, wherein the instructions to
 2 identify a first version of the software module comprise instructions to
 3 communicate with a physical device associated with the software module.

1 21. The program storage device of claim 20, wherein the instructions to
 2 communicate comprise instructions to determine an identifier value of the
 3 physical device.

1 22. The program storage device of claim 21, further comprising instructions to
2 determine a subsystem identifier value of the physical device.

1 23. The program storage device of claim 20, wherein the instructions to
2 communicate comprise instructions to determine a basic input-output system
3 version identifier value of the physical device.

1 24. The program storage device of claim 17, wherein the instructions to
2 identify a second version of the software module comprise instructions to
3 communicate with an update information source.

1 25. The program storage device of claim 24, wherein the instructions to
2 communicate further comprise instructions to:
3 identify the software module to the update information source;
4 receive, from the update information source, an indication of the second
5 version of the software module.

1 26. The program storage device of claim 24, wherein the instructions to
2 communicate comprise instructions to communicate by a modem.

1 27. The program storage device of claim 24, wherein the instructions to
2 communicate comprise instructions to communicate by a computer network.

1 28. The program storage device of claim 24, wherein the instructions to
2 communicate comprise instructions to communicate with a database server
3 device.

1 29. The program storage device of claim 17, wherein the instructions to
2 determine comprise instructions to compare at least one characteristic of the first
3 identified first version of the software module with the same characteristic of the
4 second identified first version of the software module.

1 30. The program storage device of claim 17, wherein the instructions to
2 indicate comprise instructions to visually display an indication of the software
3 module determined to be the most current version to a user.

1 31. The program storage device of claim 18, wherein the instructions to
2 obtain comprise instructions to retrieve that version of the software module
3 determined to be the most current version from an update source.

1 32. The program storage device of claim 31, wherein the instructions to
2 retrieve comprise instructions to retrieve from an update source that is physically
3 distinct from the location of the first identified version of the software module.

33. A computer executed method to update a software module, comprising:
identifying a software module;
automatically obtaining version information of the software module from a
local source;
automatically obtaining version information of the software module from a
non-local source;
comparing the version information from the local source with the version
information from the non-local source; and
automatically retrieving an update module for the software module if the
version information from the non-local source is newer than the version
information from the local source.

34. The method of claim 33, wherein the act of retrieving further comprises
updating the software module with the retrieved update module.

35. The method of claim 33, further comprising automatically updating the
software module with a local update module obtained from a local media source
if the version information from the local source is newer than the version
information from the non-local source

36. The method of claim 33, wherein the act of obtaining version information
from a local source comprises, obtaining version information from a registry file.

37. The method of claim 33, wherein the act of obtaining version information
from a local source comprises, obtaining version information from a local floppy
disk.

1 38. The method of claim 33, wherein the act of obtaining version information
2 from a non-local source comprises, obtaining version information from a website.

1 38. The method of claim 33, wherein the act of obtaining version information
2 from a non-local source comprises, obtaining version information from a world
3 wide web site.

1 40. The method of claim 33, wherein the act of obtaining version information
2 from a non-local source comprises, obtaining version information from dial-in
3 server.

SOFTWARE MODULE UPDATE**Abstract**

A technique to update a software module includes identifying a first
5 version of the software module, identifying a second version of the software
module, determining which of the first and second versions of the software
module is the most current version, and indicating that version of the software
module determined to be most current. Techniques in accordance with the
invention may also include obtaining that version of the software module
10 determined to be the most current version and, possibly, loading the obtained
version of the software module onto a user's computer system. Methods in
accordance with the invention may be stored in any media that is readable and
executable by a programmable control device.

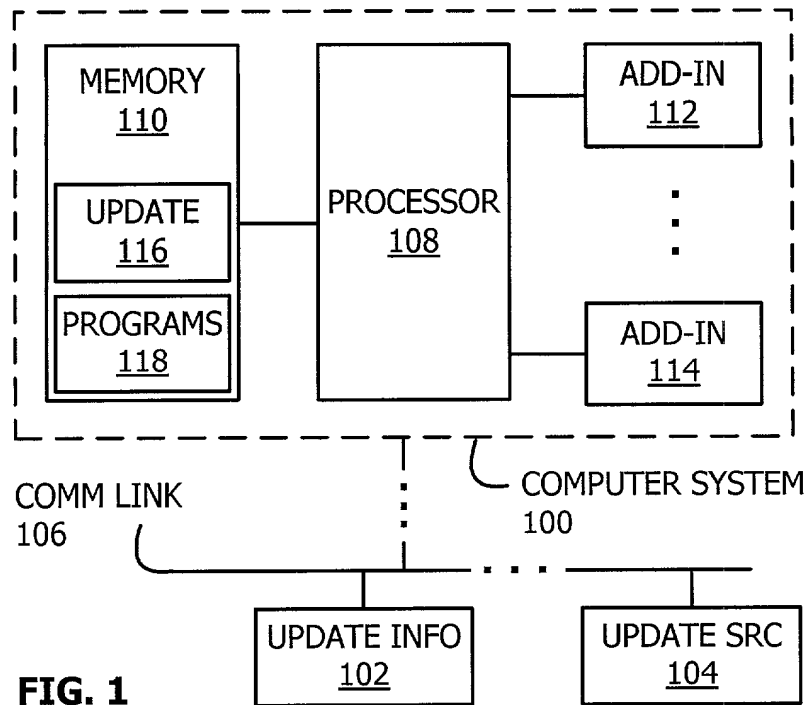


FIG. 1

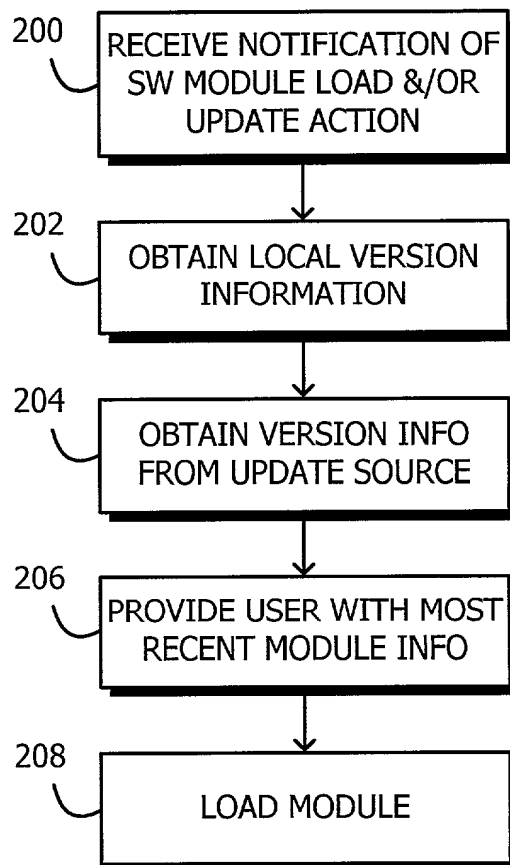


FIG. 2

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Commissioner of Patents and
Trademarks
Washington, D.C. 20231

As a below named inventor, I hereby declare that:

I believe I am the original, first, and sole inventor of the subject matter which is claimed and for which a patent is sought on the above identified invention, the specification of which is attached hereto.

I hereby state that I have reviewed and understand the contents of the above-identified specification, including the claims.

I do not know and do not believe that the claimed invention was ever known or used in the United States of America before my invention thereof, or patented or described in any printed publication in any country before my invention thereof or more than one year prior to this application, that the same was not in public use or on sale in the United States of America more than one year prior to this application, and that the invention has not been patented or made the subject of an inventor's certificate Issued before the date of this application in any country foreign to the United States of America on an

application filed by me or my legal representatives or assigns more than twelve months (for a utility patent application) or six months (for a design patent application) prior to this application.

I acknowledge the duty to disclose all information known to me to be material to patentability as defined in Title 37, Code of Federal Regulations, Section 1.56.

Send correspondence to Coe F. Miles, TROP, PRUNER, HU & MILES, P.C., 8554 Katy Freeway, Ste. 100, Houston, TX 77024 and direct telephone calls to Coe F. Miles, (713) 468-8880.

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

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